TRAFFIC ENGINEERING

INSTITUTE OF TRAFFIC ENGINEERS
60 JOHN STREET
NEW YORK, N. Y.

November, 1938

TRAFFIC ENGINEERING

Published by

INSTITUTE OF TRAFFIC ENGINEERS

60 JOHN STREET NEW YORK, N. Y.

Vol. 9 November, 1938 No.

EDITED by the LIBRARY COMMITTEE

BRUCE D. GREENSHIELDS, Chairman

E. A. BARTON
D. S. BERRY
M. E. BRUENING
G. N. GOLDIE
O. M. GUNDERSON
A. B. HORWITZ
M. A. KRAFT
H. W. OSBORNE
L. F. RADER
C. H. REX
P. X. RICE
I. S. SHATTUCK

A DIGEST OF CURRENT LITERATURE

ON STREET AND HIGHWAY TRAFFIC

and

NEWS OF THE INSTITUTE OF TRAFFIC ENGINEERS

Subscription Rate . . . . . $1.00 per year

A DIGEST OF CURRENT LITERATURE

101. ACCIDENT REDUCTION (American City, October)

Reduction of fatal traffic accidents averaging 34% in 17 cities during the last year, following the installation of accident-prevention bureaus, is reported by the International Association of Chiefs of Police. These seven cities showed a reduction of more than 50% in fatal traffic accidents, as follows: Evanston, Ill., 100%; Saginaw, Michigan, 63%; Louisville, Kentucky,58%; Columbus, Ohio, 54%; Detroit, Michigan, 52%; Bridgeport, Connecticut, 50%; and Greenwich, Connecticut, 50%. Accident-prevention bureaus have been installed also in Syracuse, New York; New Haven, Connecticut; Cincinnati, Ohio; Hartford, Connecticut; Miami, Florida; Atlanta, Georgia; Oakland, California; Waterbury, Connecticut; South Bend, Indiana; and Chattanooga, Tennessee. Installations have been started in Cleveland, Ohio, and the Indiana State Police Department. Surveys preliminary to the installation of accident-prevention bureaus have been completed in Los Angeles and Long Beach,California, and Memphis, Tennessee.

102. SHOULD TRAFFIC ENGINEERING BE IN THE POLICE OR ENGINEERING DEPARTMENT--Robert A. Mitchell (Public Works Congress,New York City,Oct. 1938)

The traffic engineer gathers together all available data about highway traffic, analyzes and studies it as an engineer would the stresses and strains of a structure and applies the results to the correction of various phases of the traffic problem.He is a specialist whose methods have improved the technique of both the engineering and the enforcement side of the traffic picture.

Traffic engineering methods,such as,training of police, creation of accident investigation squads, coordination of traffic signals,efficient use of street, area, etc., can bring about an improvement in enforcement methods and the use of up-to-date control regulations which usually result in a very noticeable reduction in accidents and freer movement of traffic.. This can only be accomplished with the whole hearted support of the police.

In Milwaukee,Kansas City,Philadelphia, New York,New Jersey, Illinois and other cities and states, traffic engineers have demonstrated beyond a shadow of a doubt that their designs of channelization islands, traffic circles, grade separations, divided roads and other highway improvements have not only sped up traffic but also prevented accidents and reduced the conflict between pedestrian and vehicles. It is evident then, that to be in a position to bring about permanent traffic improvements,traffic engineering must be closely linked with the engineering department, or if part of another department, the traffic engineer must have authority enough to see that consideration is given to his designs for physical street changes.

Traffic signals, signs and markings are all mechanical methods of controlling the movement of traffic. Their effectiveness in accident reduction depends on driver obedience, their help in eliminating congestion, mainly on their design,erection, operation and maintenance. The former is an enforcement function requiring the services of the police, the latter an operating function requiring the use of engineering calculations. Having the traffic engineer in one department and the erection and operation of this equipment under the jurisdiction of another, tends towards inefficiency even when most cordial relations exist between departmental heads and the traffic engineer. He should be given complete charge of the design,erectional operation of this equipment, then he could successfully operate in either the police or engineering departments, or a department of his own.

A big improvement can be made in traffic conditions by using proper enforcement methods and better administration policies, but the creation of functionally sound traffic facilities is necessary to bring about more permanent and lasting improvements.Organizations, such as the American Public Works Association, International Association of Chiefs of Police,Institute of Traffic Engineers, and other,should make a thorough study of all the facts and then recommend to public officials a uniform and practical organization for handling the traffic engineering side of traffic problems.

103. FIRE PROTECTION FOR MOTOR VEHICLES-W. J. Gottlieb (Safety Engineering, August, 1938, pages 35,36)

One phase of safety long overlooked is that of fire in motor vehicles.Best estimates indicated that annually over 200,00 motor vehicles catch fire in the United States.

Principal fire hazards connected with motoring are:

(1) Electrical--short circuits, defective wiring.
(2) Motor and exhaust--backfires, overheating, grease and waste.
(3) Fueling--spilling gasoline, ignition of vapor, static electricity.
(4) Gasoline piping--and intake--leaks in tank, pipes, carbureator.
(5) Other--overheated brakes, collisions, upsets, ignition of upholstery and other combustible materials by cigarette stubs and pipe embers.

To avoid fires, cars should be well serviced; the engine compartment should be kept free from accumulations of grease and oil; there should be no smoking when the car is being fueled. Speed on down grades should be controlled by shifting to a lower gear rather than using the brakes.

Although the Safety Regulations of the Interstate Commerce Commission require extinguishers on all trucks and buses, there is little likelihood of a similar regulation extending to passenger cars. There are, however, many police department and highway patrols which have been equipped with suitable extinguishers.

104. ROADS FOR FAIR AND PARK-Henry Welles Durham (Engineering News-Record, September 22, 1938)

The road building task that confronted the engineers of the Fair divided itself into two parts : first, providing temporary roads tha could carry the heavy trucks over the soft ground to serve the many operations that had to be carried on before the roads and streets could be graded and surfaced; and second, grading and surfacing the permanent and semi-permanent roads that will serve the Fair and park that is to be developed in the future.

For the roads which are to serve as main routes of traffic during and after the Fair, a base course of stone of sizes from 3/4 to 3 inches is rolled to a compact thickness of 4 inches. On this base is a cold laid plant-mix, bituminous macadam in two courses consisting of 2 inch binder and 1 inch wearing surface.

For the routes of lighter traffic, mainly pedestrian, close to the buildings, a similar plant-mixed bituminous macadam is laid directly on a consoli-

dated base of the existing ash. For such a pavement a wood curb is used. This pavement is laid with 2-1/2 inches of binder course and 1 inch top. Walks, especially those in courts and gardens where no wheel traffic is permitted, are also constructed of a bituminous mixture laid on a rolled base of cinders. In order to present a more pleasing appearance, such walks have five to seven pounds per square yard of limestone chips spread over the surface and rolled into it.

The designers at the World's Fair had no definite plan of road construction to follow. They had no idea as to what the area adjacent to the roads was going to be used for. The problem was the working out of an equation in which all the factors were unknown, except for the final cost.

105. HIGHWAY LIGHTING EXPERIMENT--Staff Article
(Engineering News-Record, October 20, 1938)

An experiment with highway lighting as a means of reducing night accidents has begun with the completion of sodium vapor lamp installations put in recently on two lengths of U. S. Route 101 near San Francisco. One of these extends 1-1/2 miles from the north end of the Golden Gate Bridge to a point beyond the Waldo tunnel. The other extends 3-1/2 miles south of the southern boundary of San Francisco. Both installations are equipped with sodium vapor lamps which have a rating of 10,000 lumen.

Two types of lighting standards are used: (1) tapered steel and (2) centrifugally spun concrete. The poles are set on a concrete base. A removable arm suspends the luminaire 2 feet inside the edge of the pavement at a height of 26 feet. On the bridge approach the spacing varies from 150 to 215 feet. South of the city the spacing is 140 feet staggered throughout.

It is expected that accident figures compiled before and after the lamp installation will show the extent to which absence of daylight is a contributing factor.

106. BRIDGE CURBS AND RAILS--Searcy B. Slack
(Engineering News-Record, October 20, 1938)

Extensive tests on highway guard rail have indicated certain general principles of designs that also apply to bridge curbs and rails. The tests showed: (1) that the rail should deflect and guide rather than stop the vehicle; (2) a smooth surface on the rail is

very desirable; (3) the rail should be offset in front of the posts, or otherwise placed so that a vehicle sliding along the rail will not strike the posts; (4) posts should not project above the rail any further than is necessary, as fenders of cars and bodies of trucks project over rail and strike the tops of the posts as the vehicle glides along the front of the rail; (5) the adjoining sections of the rail should be connected that they will act together under the impact of a vehicle ; this requires longitudinal strength in the rail elements and end connections.

A substantial curb at least 12 inches high should be built, for the purpose of checking cars and trucks. The rail should be set back at least 12 inches from the curb line so that the overhanging truck bodies will not damage the rail.

107. HIGHWAY BRIDGES-Maryland State Road Commission (American City, October)

Baltimore may soon join New York, Boston and San Francisco in being one of the important seaport cities in this country to take highway traffic accross its harbor over a bridge or through a tube.

The Maryland State Roads Commission has recently announced a $30,000,000 crossing plan of vital importance to local and interstate traffic, in a pamphlet entitled MARYLAND'S PRIMARY BRIDGE PROGRAM. Four structures are proposed over (1) the Susquehanna River near Havre de Grace (2) Baltimore Harbor, (3) the Potomac River at Newburgh,and (4) Chesapeake Bay eigher from Baltimore or near Annapolis.

The crossings as a group form a basis for a fine trunk-line highway system, and make possible the development of a modern state wide highway plan that is needed greatly.

Since there is insufficient money available to finance both the road and the bridge-building program from current motor vehicle revenue, the idea of building the crossing structure from revenue bonds, serviced from tolls, was considered and found feasible. When the bonds have been paid off, the structures will be free. Thus,the public can get the benefit of these facilities within a comparatively short time;whereas, if they had to be built out of current motor-vehicle revenue, it would be many years before construction could be undertaken, if ever.The plan has the advantage of having the persons directly benefited pay for the facilities, rather than putting the burden of financing these veryexpensive structures on the general public.

108. TRANSPORT FOR FIFTY MILLION VISITORS-Henry M. Brinckerhoff. (Engineering New-Record, September 22, 1938)

The transportation problem of the New York World's Fair requires provision for the carrying of 50 million visitors to and from the site in 185 days, an average of 270,000 per day, and on large attendance days, from 400,000 to 600,000. In terms of "passengers carried" this means 100 million total rides or from 540,000 to one million passengers per day. These figures do not include the World's Fair employees estimated at 35,000; however, these will not travel during visitors' rush hours. All forms of transportation facilities will serve the fair, because of the lack of proper housing facilities near the Fair.

The Fair site is approximately in the geographical center of New York City, nevertheless it is eight miles from the principal hotel, railroad terminal, retail business, and amusement district of the city. The transportation load is far in excess of anything ever required by New York City's extensive transportation system.

The transportation problem for the World's Fair fell into two general divisions:

(1) Exterior. Including all forms of transit facilities to and from the site.
(2) Interior. Supplying means of convenient carrying visitors about the fair grounds.

Fortunately the transportation lines operating from the city to or near the World's Fair site carry their rush loads, opposite in direction to the World's Fair traffic. Therefore, the trains will be available for carrying World's Fair visitors to or from the fair grounds.

In order to determine a reasonable provision for maximum hourly traffic, a detailed study was made of one half hourly periods on typical days at the Chicago Century of Progress. From this information, a total required capacity for handling 160,000 visitors per hour was adopted, 100,000 by rapid transit, and 60,000 by bus, street car, boat, and private automobiles.

To handle the 100,000 passengers per hour by rapid transit the three track Corona-Flushing line of the Interboro and B.M.T. systems, the Port Washington line of the Long Island R.R., and the Queens Boulevard line of the Independent Subway were available, but required extensive enlargement and improvements to meet World's Fair Traffic conditions.

A comprehensive low cost system for carrying

visitors about the grounds has been devised. A system of bus routes within the fair grounds has been organized. The visitors will be carried from point to point swiftly and at little cost.

The goal toward which efforts have been directed is to overcome the common complaint at recent large expositions of the inability to "see the fair" without exhausting tramping to a footsore, weary condition.

109. MOTOR TRANSPORTATION-A FORWARD VIEW--Bruce D. Greenshields (Proceedings, American Society of Civil Engineers, October 1938)

Harmonizing highway construction and motor-vehicle design with human behavior is an important problem of motor transportation.The engineer has learned how to deal with inanimate materials and forces that behave in a definite manner under given conditions. Human nature seems perverse and is so uncertain that the engineer, having correctly designed a highway from a mechanical standpoint, is inclined to let the"fools" kill themselves if they insist upon it.

Whatever his inclination, however, the engineer must accept the fact that the people who use the highways pay for them and, therefore, have a right to demand that they be safe.

A complete transportation system includes the highway, the vehicle, and the driver. Not only is highway safety dependent upon the driver's ability, but its utility is limited by his whims and desires.

Although the unexpectedness in human nature cannot be removed like the perplexities of the highway there is the gratifying fact that human nature en masse is not so variable after all. From his studies of behavior on the highway (such as spacings between vehicles, the distance required for passing, and the point at which drivers slow down because there is a vehicle ahead), Mr. Greenshields has arrived at the definite conclusion that drivers do behave in a definite manner under certain conditions. The curves resulting from the plotting of such data are surprisingly smooth.

The traffic engineer must study human nature to know how to design safe highways. The "specifics" of driving behavior must and can be determined by careful analysis.

110. TRAFFIC SAFETY, CIVIC BEAUTY, AIMS OF $2,000,000 MEMPHIS STREET PROGRAM--William B. Fowler, City Engineer. (American City, November, 1938)

Traffic safety and civic beauty are companion benefits of a $2,000,000 street improvement program now being carried on in Memphis, through Federal allotments supplementing state and city funds. Traffic hazards are being eliminated and boulevards and parkways are being made more attractive.

Under a $251,376 WPA project, concrete curbs and gutters are being built to protect shoulders of ragged-edged streets and provide better drainage, and under a $118,998 project for graveling city streets, 25 miles of muddy and dusty streets have been eliminated. Through a $43,570 project, crews are oiling gravel streets, and repairing old and badly worn oil streets, smoothing out rough places and otherwise giving the streets a thorough overhauling. WPA workers also are reconditioning concrete base, repairing curbs and gutters, and laying new concrete surface on a number of streets under a project for resurfacing streets bearing heavy traffic.

Two important traffic arteries are being widenedunder a $266,665 project undertaken jointly by the state and Federal Bureau of Public Roads, under a recently approved $1,000,000 PWA allotment; six other streets will be widened, eight resurfaced with asphalt pavement. A WPA project, entailing expenditure of $87,289, has made possible the extension of Riverside Drive with a new link which provides a sweeping view of the Mississippi River. With the completion of this link and repaving and widening projects, a complete parkway loop will be available.

To make the highways safe as well as wide and beautiful, dangerous grade crossings have been eliminated by the construction of two concrete viaducts, one of them 3,000 feet long and by two underpasses, one of them 1400 feet long and built on a plan that eliminates center posts.

Children's safety has been the motivating purpose in construction of new sidewalks at 16 schools under a $100,348 WPA project which includes the building of new walks to replace muddy paths at parks, fire stations and other city-owned property.

Nor have the back streets--or alleys--been neglected. An alley improvement program already under way has been expanded through a supplemental grant of $170,434. When work in progress is completed, Memphis will be a city where motoring is both safe and pleasant.

THE INSTIUTE OPPOSES ADVERTISING ON TRAFFIC SIGNS. The Institute at its recent annual meeting on October 9, 1938, discusses at considerable length the advertising which appears on many traffic signs. It came to the definite conclusion that the Institute should take steps to prevent it. The resolution presented by Mr. Cole and approved by the Board of Direction was:

(1) That the I.T.E. is opposed to the use of standard traffic signs for any advertising purpose or for any other purpose, except that for whcih intended, and is opposed to placing the name of any organization, other than the authority having jurisdiction, on any standard sign or support of such sign.

(2) That a copy of this motion be sent to the Joint Committee on Signs, Signals and Markings.

(3) That members of the Institute be requested to advise the Secretary of any activities in this field, which may come to their attention.

In accordance with the resolution the Committee will send a copy of this resolution to Mr. E. W. James.

RESOLUTION TO MR. CHARLES M. HAYES. Mr. Hayes has done a great deal to further the interests of the Institute of Traffic Engineers. In appreciation of his efforts the Institute is presenting to Mr. Hayes a beautifully framed hand-engraved copy of the following resolution signed by the President, Mr. Leslie J. Sorenson.

"WHEREAS Mr. Charles M. Hayes, President of the Chicago Motor Club, possesses an active and helpful interest in traffic engineering and in the Institute of Traffic Engineers, and has evidenced this interest by assigning a specialist of his to the task of publicizing this meeting of the Institute and providing materials important to its success.

THEREFORE be it Resolved by the Board of Direction of the Institute of Traffic Engineers in regular session on October 9, 1938, express to Mr. Hayes its sincere appreciation for his invaluable aid."

PROGRAM COMMITTEE OF THE STEET AND HIGHWAY SAFETY SECTION OF THE TENTH CONVENTION OF THE GREATER NEW YORK SAFETY COUNCIL. Mr. Hawley Simpson to head Program Committee of the Street and Highway Safety Section of the Tenth Convention of the Greater New York Safety Council. Again emphasis will be given to traffic engineering. The following Institute members are on his committee.

Bruce D. Greenshields — Lloyd Rader
Harold F. Hammond — Arnold Vey
T. M. Matson

1939 PUBLICATION COMMITTEE. President Sorenson has again appointed Mr. Paul Green as Chairman of the 1939 Publication Committee, and has asked the following members to serve with Mr. Green on this important committee to edit the Traffic Controlling Facilities Section of the AMERICAN CITY magazine:

Ralph F. Mitchell — William C. Brandes
E. B. Lefferts — William R. McConochie
George W. Barton — James R. Guthrie
William G. Eliot — Martin Bruening
William A. Van Duzer — Edward H. Eames
Wilbur S. Smith — Miller McClintock
T. M. Matson — Harry C. Koch
Ralph W. Eaton

SOUTH AFRICAN ACCIDENT STATISTICS. Mr. C. V. Tiran, Chief Traffic Officer of the City of Port Elizabeth, South Africa has sent in the following Accident Statistics of his city:

	1937	1938	Reduction
Accidents	688	547	141
Motor vehicles involved	877	715	162
Pedal cycles involved	185	164	21
Persons injured	316	219	25
Persons killed	21	8	13

TRAFFIC ENGINEERING APPOINTMENT. M. W. Cochran has been appointed Traffic Engineer of Detroit to succeed Harold F. Zumstein, who resigned a few weeks ago.

Mr. Cochran is 45 years old. An engineer for

nearly 20 years, he has spent most of his professional years in the field of highway construction.

In 1919, following his discharge from the army, he came to Detroit and went to work for the W. E. Wood Company as a construction and layout engineer. He later formed his own engineering company. In 1923 he went with the State Highway Department as construction engineer and during this period directed the paving of the Grand River Avenue from Farmington to Lansing.

Next followed 5 years as vice president of a Chicago Construction Company, during which time he had charge of ten million dollars worth of municipal paving and grade separation work throughout Michigan. During the last ten years he has operated his own company and has acted as consulting engineer to various agencies.

I. S. SHATTUCK ANNOUNCES THE OPENING OF OFFICES IN SAN FRANCISCO. I. S. Shattuck, planning and traffic consultant, announces the opening of offices in San Francisco. Mr. Shattuck, who is transportation chief of the Golden Gate International Exposition and Civic Development Director of the Oakland Chamber of Commerce has been retained from time to time by various California cities for preparing planning and zoning studies and traffic and transportation plans. Beginning October 1st Shattuck is retained as planning advisor to three California counties Alameda, Marin, and Solano. The planning program for each of these counties was formerly carried on by Hugh R. Pomeroy, who is now the traveling consultant for NAHO and ASPO.

Mr. Shattuck's planning experience dated from 1922, when, after graduation from Sheffield Scientific School of Yale University, he entered the employ of the Minneapolis City Planning Commission as engineering draftsman. From 1925 to 1929 he directed either zoning or major street studies as resident engineer for Harland Bartholomew in the following cities: Schnectady, New York; Oakland, Calif.; San Jose, Calif.; and San Francisco, Calif. As chief engineer of the San Francisco Traffic Survey Committee from 1929 to 1931, he was associated with Dr. Miller McClintock who at the time was retained as Director of the Committee's work. In 1932, Mr. Shattuck was appointed City Planning Engineer of Oakland, and remained in that position until the end of 1936, when he was selected by the Works' Director of the Golden Gate International Exposition as Chief of Transportation for the Exposition. Part time employment by the Oakland Chamber of Commerce as Manager of the newly created Civic Development started in 1937.

At present the work with the Exposition and the Oakland Chamber of Commerce is continuing and will not be affected by the recently started county planning work.

RESOLUTION TO NATIONAL CONSERVATION BUREAU. The Board approved the following resolution. The National Conservation Bureau has given invaluable cooperation and assistance to the Institute of Traffic Engineers. In appreciation of this interest a beautifully framed hand-engraved copy of the following resolution signed by President Sorenson will be presented to them:

> "WHEREAS the cooperation and assistance of the National Conservation Bureau have been invaluable in furthering the work of the Institute, be it
>
> RESOLVED, that the Board express to the National Conservation Bureau its deep appreciation of this cooperation."

LIBRARY COMMITTEE. President Sorenson has again appointed Bruce D. Greenshields chairman of the Library Committee and asks that the following members assist him in editing TRAFFIC ENGINEERING:

Eugene A. Barton	Henry W. Osborne
Charles Rex	Aaron B. Horwitz
Philip X. Rice	Martin E. Bruening
Lloyd F. Rader	I. S. Shattuck
George M. Goldie	O. M. Gunderson
Merwyn A. Kraft	Donald S. Berry

TRAFFIC ENGINEERING. This is the first issue of the new and improved TRAFFIC ENGINEERING. This is a step forward in our attempt to put TRAFFIC ENGINEERING out in front. Don't forget that increased sale means that we can continue to improve this publication. The Library Committee will appreciate any suggestions you may have.

INSTITUTE OF TRAFFIC ENGINEERS

FOUNDED 1930

OFFICERS

LESLIE J. SORENSON, President
HAWLEY SIMPSON, Vice-President
HAROLD F. HAMMOND, Secretary-Treasurer

BOARD OF DIRECTION

JOHN T. GIBALA
WALTER H. KLAPPROTH
LEWIS W. McINTYRE
ROGER L. MORRISON
EARL J. REEDER
WALTER F. ROSENWALD

THE OBJECTIVES OF THE INSTITUTE

The objects of the Institute shall be the advancement of the art and science of traffic engineering, the fostering of traffic engineering education, the stimulation of original research in traffic engineering, the professional improvement of its members, the encouragement of intercourse between men with mutual interests in traffic engineering, and the establishment of a central point of reference and union for its members. (Article I, Section 4 of the Constitution of the INSTITUTE OF TRAFFIC ENGINEERING).

ANNUAL PROCEEDINGS $1.10
Contains all papers presented at the annual and regional meetings.